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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,453	09/05/2003	Yuan Wu	03-SIN-092	8429
7590 Lisa K. Jorgenson, Esq. STMicroelectronics, Inc. 1310 Electronics Drive Carrollton, TX 75006			EXAMINER PAUL, DISLER	
			ART UNIT 2615	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/656,453

Applicant(s)

WU ET AL.

Examiner

DISLER PAUL

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/5/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9, 11, 13-27, 30, 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 9 is/are allowed.
- 6) ☒ Claim(s) 2-7, 11, 13-23, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 24-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The applicant's claims have been considered and rejected in view of new ground rejection of Kumamoto (US 6,285,766 B1) and thus, this office action will be non-final.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7, 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumamoto (US 6,285,766 B1).

Re claim 32, Kumamoto et al. disclose of the method comprising: generating first output signals for a first physical speaker and generating second output signals for a second physical speaker (fig.6-7/wt speakers); and wherein the first and second output signals are produced using one or more first filters, one or more forward crossover paths each comprising a first delay line and second filter, and two feedback crossover paths each comprising a second delay line and a third filter; and further comprising altering a frequency response of one or more of the

filters and a delay of one or more of the delay lines to change the location of one or more of the virtualized speakers (fig.6-12; col.12 line 1-35; to create virtual sound/with feedback and forward path with delay and filters).

Re claim 7, Kumamoto disclose of the audio processor, comprising: a virtualizer (col.1 line 14-25/enable virtualizing) operable to process audio information to virtualize at least one speaker so that, from a listener's perspective, sounds appear to come from at least one direction where a physical speaker is not present: a controller operable to configure the virtualizer, wherein the virtualizer can be configured to virtualize the at least one speaker at any location in a space around the listener (col.4 line 27-35), wherein: the virtualizer comprises at least one first filter, one or more forward crossover paths each comprising a first delay line and a second filter, and two feedback crossover paths each comprising a second delay line and a third filter (see fig.7,12 wt both forward and feedback filters and delay) ; and the controller is operable to configure the virtualizer by altering a frequency response of one or more of the filters and a delay of one or more of the delay lines (fig.1 (b); fig.2 (b); fig.5,10,13; col.14 line 1-15; col.16 line 30-55/filters in feedback and forward crossover for sound localization).

And furthermore in regard to "operable"-

****notice, the examiner consider all the limitations after the word operable as not further positively limiting the claim invention and thus as result Kumamoto et al. meets the claimed limitations as long as it is capable of doing the limitations as recited.

3. Claims 2-6, 8-9, 11, 13-14, 16-23, 27, 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumamoto (US 6,285,766 B1).

Re claim 2, Kumamoto et al. disclose of the audio processor, comprising: a virtualizer (col.1 line 14-25/enable virtualizing) operable to process audio information to virtualize at least one speaker so that, from a listener's perspective, sounds appear to come from at least one direction where a physical speaker is not present(col.1 line 1-30; fig.6); and a controller operable to configure the virtualizer, wherein the virtualizer can be configured to virtualize the at least one speaker at any location in a space around the listener and wherein the virtualizer (col.4 line 25-37) comprises: a filter operable to filter input signals comprising the audio information; a forward crossover path operable to receive, delay, and filter an output of the filter; a first combiner operable to produce first output signals for a first physical speaker using the output of the filter; a second combiner operable to produce second output signals for a second physical speaker using an output of the forward crossover path; a first feedback crossover path operable to receive, delay, and

filter the first output signals, the second combiner further operable to produce the second output signals using an output of the first feedback crossover path; and a second feedback crossover path operable to receive, delay, and filter the second output signals, the first combiner further operable to produce the first output signals using an output of the second feedback crossover path (fig.1,6-8,12; col.14 line 1-30)/combiner and forward and feedback filters with delay and filters).

And furthermore in regard to "operable"-

****notice, the examiner consider all the limitations after the word operable as not further positively limiting the claim invention and thus as a result Kumamoto et al. meets the claimed limitations as long as it is capable of doing the limitations as recited.

Similarly Re claims 3-6 have been analyzed and rejected for same reason as claim 1.

RE claims 11, 13-14 have been analyzed and rejected with respect to claim 1.

RE claims 18-19 have been analyzed and rejected with respect to claim 1.

Re claim 20, Kumamoto et al. disclose of the apparatus of claim 18, wherein: each forward crossover path comprises a first delay line and a second filter; each feedback crossover path comprises a second delay line and a third filter; and the apparatus is configured by altering a frequency response of one or more of the filters and a delay of one or more of the delay lines (fig.6-12; col.12 line 1-35; to create virtual sound).

Re claim 21, the apparatus of claim 18, further comprising a controller operable to configure the apparatus (col.5 line 1-6).

Re claim 22, the apparatus of claim 21, wherein the controller is operable to configure the apparatus based at least partially on locations of two or more physical speakers and locations of the speakers being virtualized (col.1 line 1-25; col.2 line 1-10/two speakers for left and right ear).

23. The apparatus of claim 18, wherein the audio processor is operable to virtualize five speakers using two physical speakers, the five virtualized speakers comprising a center speaker, two frontal speakers, and two surround sound speakers (see claim 1).

And furthermore in regard to "operable"-

****notice, the examiner consider all the limitations after the word operable as not further positively limiting the claim invention and

thus as a result Kumamoto et al. meets the claimed limitations as long as it is capable of doing the limitations as recited.

Re claim 16, the device of claim 11, wherein the audio source comprises at least one of a television tunes, a radio tuner, a CD reader, and a DVD reader (fig.1(1)).

Re claim 17, the device of claim 11, wherein the audio source comprises an audio/video source operable to provide both audio and video information; and further comprising a video processor operable to process the video information (fig.24-25; page 11[0153] line 7-13/enable video and audio processing to be reproduced).

Re claim 27 has been analyzed and rejected with respect to claim 1.

Re claim 30, the method of claim 27, wherein the first and second output signals emulate the effects of multiple virtual speakers on the ears of the listener (fig.1, 6; col.1 line 40-60/ears virtual sound).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable by Kumamoto (US 6,285,766 B1) and further in view of Abel ("6,668,061 B1").

Re claim 15, the device of claim 11, wherein the audio processor is operable to virtualize numerous speakers with five physical speakers (page 1[0012 line 9-13; fig.14"). But, Kumamoto et al. fail to disclose of the specific of virtualizing the five speakers using two physical speakers, however, Abel disclose of a system wherein the specific of virtualizing the five speakers using two physical speakers (fig.2-3) for the purpose of enabling the user to enjoy the effects of surround sound limited availability of physical speakers units. Thus, taking the combined teaching of Kumamoto et al. and Abel as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to incorporate the specific of virtualizing the five speakers using two physical speakers for the purpose of enabling the user to enjoy the effects of surround sound limited availability of physical speakers units.

5. Claims 30- 31 are rejected under 35 U.S.C. 103(a) as being unpatentable by Kumamoto (US 6,285,766 B1) and Kawano (US 6,804,358 B1).

Re claim 31, Kumamoto et al. disclose of the method of claim 27 with virtual sounds, but, Kumamoto et al. fail to disclose of the specific wherein the first and second output signals emulate the effects of multiple virtual speakers at any locations in a space around the listeners. But, kawano disclose of a system wherein similar concept of having multiple virtual speakers at any locations in a space around the listeners with the first and second output signals (fig.1,6;

col.3 line 30-46) for purpose of creating a theater sound effect for optimum sound experience. Thus, taking the combined teaching of Kumamoto et al. and Kawano as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Kumamoto et al. with the similar concept of having multiple virtual speakers at any locations in a space around the listeners with the first and second output signals for purpose of creating a theater sound effect for optimum sound experience.

Re claim 30 has been analyzed and rejected with respect to claim 31.

Allowable Subject Matter

4. Claims 8-9 are allowed.
5. Claims 24-27 are objected as being depending on a rejected claim but would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615